Improving Incident Command Functions for the Prince George's County Fire/EMS Department

EXECUTIVE DEVELOPMENT

By: Jerome F. LaMoria

Prince George's County Fire/EMS Department

Prince George's County, Maryland

An applied research project submitted to the National Fire Academy

as part of the Executive Fire Officer Program

October, 2005

ABSTRACT

The problem is that the Prince George's County Fire/EMS Department (PGCF/EMSD) has experienced a line-of-duty death and several serious firefighter injuries that have been attributed to ineffective incident command functions. In addition to the "high-profile" incidents that resulted in firefighter deaths and injuries there have been many more accounts of incidents that have been negatively impacted by ineffective incident command functions.

The project identified causes of incident command failures and solutions to improve the incident command functions of the PGCF/EMSD. Five research questions were answered to guide solutions.

1. Is this problem, of firefighter death and /or injuries, unique to the PGCF/EMSD?
2. What ineffective incident command functions led to firefighter injuries or fatalities in Prince George's County?
3. What is the current developmental process and requirements for incident commanders in the PGCF/EMSD?
4. Which jurisdictions or fire departments demonstrate proficient incident command and how do they achieve success?
5. How does the developmental process/requirements for fire service incident commanders compare with managers of other high-risk activities or occupations such as the military?

The descriptive methodology of research was employed. The procedures included a literature review, an analysis of the National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program database. Questionnaires were used to gather information on how command officers have developed skills and met requirements, both with-in and outside of the PGCF/EMSD.

The results showed the importance of command officer development and efficient incident command functions.

Recommendations made were to develop and deliver a Command Officers Curriculum that is specific to the operations of the PGCF/EMSD and to include this as a minimum requirement to operate as a command officer in the department. The primary goal would be to provide a consistent base of instruction to anyone who would bear the responsibility of serving in the role of incident commander for multiple unit operations regardless of affiliation to the career or volunteer force. Establishment of a formal mentoring program to facilitate the gaining of quality experience was also recommended.

TABLE OF CONTENTS

INTRODUCTION

The Prince George's County Fire/EMS Department (PGCF/EMSD) has utilized an Incident Command System since the early 1980's. A Standard Operating Procedure (SOP) was established in 1983 that formalized the incident command system. At the inception of the SOP, training was provided to personnel to familiarize them with the system. Beyond the initial training, and sporadic training for periodic revisions, there has been little formal departmental training for fire ground commanders in the use of the ICS and in developing abilities in commanding emergency incidents (Poole, 1998). Most revision or additions to SOP's have been merely placed in print and distributed to the workstations with out any formalized training.

The PGCF/EMSD has experienced firefighter line-of-duty deaths and serious firefighter injuries in recent history that can be attributed, in part, to failures in the incident command functions. In addition to the "high-profile" incidents that resulted in firefighter deaths and injuries there have been many more accounts of incidents that have been negatively impacted by ineffective incident command functions. Many of these incidents were unreported or where never investigated.

This report focuses on four incidents, which resulted in one firefighter fatality and three potentially fatal injuries. Numerous other past incidents have resulted in serious injuries and a handful of firefighter fatalities but have not been adequately documented to include in this research.

> The great majority of serious accidents are both predictable and preventable, and predictability is directly related to experience. Most fatal incidents and serious injuries can be traced to a series of contributing factors that come together to produce a highly undesirable outcome. Those individual contributing factors make themselves evident over a period of time through minor mishaps and near-miss incidents that should in an ideal world, cause fire chiefs and safety officers to identify problems and implement corrective actions. For every tragic outcome there could be 10 or 100 warning events. (Routley, 2005)

The departmental documents that were produced in the aftermath of each of these incidents clearly illustrate failures and weaknesses in the incident command functions. Taking no action to address these issues only makes them predictors of tragic events yet to occur.

The purpose of this applied research project is to identify cause(s) of incident command failures and possible solutions to improve the incident command functions of the PGCF/EMSD. Five research questions were developed in an effort to guide the author in finding solutions to the purpose of this applied research project. The descriptive method of research will be utilized to answer these research questions.

1. Is this problem, as it relates to firefighter death and /or injuries, unique to the PGCF/EMSD?
2. What were the ineffective incident command functions and how did they effect the outcomes of the incidents which led to firefighter injuries or fatalities in Prince George's County?

3. What is the current developmental process and requirements for incident commanders in the PGCF/EMSD?
4. Which jurisdictions or fire departments demonstrate proficient incident command and how do they achieve success?
5. How does the developmental process and requirements for fire service emergency scene incident commanders compare with the developmental process and requirements for managers of other high-risk activities or occupations such as the military?

BACKGROUND AND SIGNIFICANCE

The PGCF/EMSD was established in 1970 when the county government charter was transformed from a commissioner style government to council/executive style of government. The creation of the Prince George's County Fire/EMS Department consolidated thirty-seven separate volunteer fire companies under one umbrella department (Bosanko, 1990).

Today, the Prince PGCF/EMSD provides fire and life safety services to over eight hundred thousand citizens in a jurisdiction covering nearly five hundred square miles. The geographical area served by the PGCF/EMSD is divided into seven battalions. Each battalion contains from five to seven fire stations. Nearly eight hundred uniform employees and one thousand volunteers provide emergency services from forty-three fire stations. Annually over one hundred twenty thousand emergency incidents are processed by the department. During the year of 2004, four hundred twenty-three incidents where listed as working structural fires.

There have been thirty-one, line-of–duty firefighter deaths recorded in Prince George's County history (Bosanko, 1990). Countless injuries have occurred of varying severity from minor to near fatal. The majority of these incidents went with out any formal review or investigation. In recent years, (since 1992) there have been several formal reports of significant incidents. One of these incidents resulted in a fatality and three resulted in near fatal injuries. All of them occurred during structural firefighting operations. Each of these reports indicated failures in the incident command system or a failure in the incident commander’s ability to handle the incident.

Historically, the PGCF/EMSD has relied upon a person's own motivation and the mentoring of superiors to prepare its personnel for the demands and challenges of command level positions. Depending on how motivated or knowledgeable the superiors and the employee

are, the level of experience, training, and skills of potential command officers can be highly inconsistent.

In 1994, the passage of Council Bill CB-82-1994 established the first minimum requirements for volunteer command officers. CB-82-1994 set into county law the minimum requirements for volunteer firefighters and emergency medical service care providers. This included the requirements for volunteer company line and chief officers. The bill does not apply to the career members of the department. Currently the minimum requirement for Career Battalion Chief is serving one year at the rank of captain and successful passing of written test and assessment centers. No requirement for career officers to attend any continuing education currently exists.

The ultimate cost of injuries to firefighters, not to mention the cost of line-of-duty deaths, is a staggering amount which is difficult to authenticate. The National Institute of Standards and Technology (NIST) reports, nationally, an annual cost between $830 million to $980 million in direct and indirect costs (NIST, 2004 P.38). Two recent firefighter injuries in the PGCF/EMSD have cost in excess of one million dollars for direct medical bills and eighty thousand dollars in lost wages (M.J. Wenzal, personal communications July 26, 2005).

This applied research project is relevant to the *Executive Development* course in the areas of service quality, organizational culture and change. The improvement of incident command functions should provide a safer and more cost effective operation that would benefit internal and external customers. The changes that this research identifies will challenge the organizational culture of the PGCF/EMSD and may require a significant change in tradition.

This applied research project is directly related to the goals and objectives of many prominent fire Service organizations. The project relates directly to the United States Fire

Administration's operational objective of reducing firefighter death and injuries by twenty five percent. It also relates to the program goals of the NIOSH Fire Fighter Fatality Investigation and Prevention Program by establishing recommendations to prevent future death and injuries. Most currently, this research project is directly related to the National Fallen Firefighters Foundations, 16 Firefighter Life Safety Initiatives.

LITERATURE REVIEW

1. Is this problem, as it relates to firefighter death and /or injuries, unique to the PGCF/EMSD?

The literature review began with an extensive review of the National Institute for Occupational Safety and Health (NIOSH) firefighter fatality study. This information was easily accessed utilizing the NIOSH website at http://www.cdc.gov/niosh/firehome.html.

> The NIOSH Fire Fighter Fatality Investigation and Prevention Program conducts investigations of fire fighter line-of-duty deaths to formulate recommendations for preventing future deaths and injuries.
>
> The goals of the program are to:
>
> - Better define the magnitude and characteristics of line-of-duty deaths among fire fighters
> - Develop recommendations for the prevention of deaths and injuries
> - Disseminate prevention strategies to the fire service.
>
> (NIOSH, 2005, Fire Fighter Fatality Investigations, ¶ 1)

This research focused on fire fighter fatality reports from January 1, 2000 until February 18, 2004. Thirty-two investigative reports, which resulted in 45 firefighter deaths, yielded two

hundred forty one recommendations. Of these, one hundred thirteen, or forty seven percent, could be attributed to incident command failures.

2. **What were the ineffective incident command functions and how did they effect the outcomes of the incidents which led to firefighter injuries or fatalities in Prince George's County?**

Four departmental publications which dealt with a firefighter fatality and three potentially fatal injuries where utilized for this research. Numerous other past incidents have resulted in serious injuries and a handful of firefighter fatalities but have not been adequately documented to include in this review.

On January 12th, 1992, a volunteer firefighter was killed battling a single family dwelling fire at 3807 Walls Lane in the Suitland area of Prince George's County. A departmental training publication written and prepared by the Bureau of Fire/Rescue Operations identified four operational deficiencies which could all be attributed to incident command functions (Poole, 1992).

On June 12th, 1998; a volunteer firefighter was injured battling a single family dwelling fire at 2205 Calvert Street in the Chillum area of Prince George's County. An independent inquiry and report was conducted and authored by Stanley L. Poole, Jr. This report identified 43 recommendations with 6 of those being related to incident command functions (Poole, 1998).

On February 22, 2004 a career lieutenant was injured battling a single family dwelling fire at 5014 Roseld Court in the Oxon Hill area of Prince George's County. Major Kevin S. Andrecs prepared a detailed report of the incident and resulting injuries through the efforts of a departmental Safety Investigations Team. This report yielded one hundred thirty eight recommendations of which 15 were related to incident command functions (Andrecs, 2004).

On December 12, 2004 a volunteer captain was injured battling a fire in a single family dwelling at 205 Sixty Ninth Street in the Seat Pleasant area of Prince George's County. Lieutenant Colonel William McGown prepared a detailed report of the incident and resulting injuries. This report yielded fifty-nine recommendations of which twenty-one were related to incident command functions (McGown, 2004).

These four documents identify two hundred forty four recommendations for improvement. A total of seventy-nine of these recommendations and critical factors, approximately thirty-two percent, call for improvements to incident command functions.

3. What is the current developmental process and requirements for incident commanders in the PGCF/EMSD?

In 1994, the passage of Council Bill CB-82-1994 established the first minimum requirements for volunteer firefighters and emergency medical service care providers (Prince George's County Government, 1994). This included the requirements for volunteer company line and chief officers. Section 11-337, of CB-82-1994 established the minimum requirements for Deputy and Assistant Volunteer Fire Chiefs, which is typically the first level of command staff for the PGCF/EMSD.

Sec. 11-337. Deputy and Assistant Volunteer Fire Chiefs.

(a) Prior to any promotional appointment to the capacity of a Deputy or Assistant Volunteer Fire Chief, each eligible member of any designated organization shall establish compliance with the minimum qualifications as follows:

(1) Age. Such member shall have attained an age not less than twenty-three (23) years.

(2) Experience. Such member shall have cumulated not less than four (4) years County experience in the capacity of a firefighter; provided, not less than two (2) years of such County experience shall be cumulated in the capacity of a fire line officer, and not less than one (1) year of such County experience shall be cumulated at the rank of Captain.

(3) Certification. Such member shall have obtained a Department of Transportation First Responder course certification, or any equivalent course of study.

(4) Such member shall have satisfactorily completed and obtained the Fire Officer II certification in accordance with Standard 1021, or any equivalent course of study.

(c) Not less than twelve (12) months prior to any promotional appointment to the capacity of a Deputy or Assistant Volunteer Fire Chief at the interim rank of "A Chief" shall first complete one or more programs of continuing education which, in the aggregate, shall require a duration of instruction of not less than twelve (12) hours; and, in addition, on an annual basis commencing upon appointment to the capacity of Deputy or Assistant Fire Chief, whether at the interim rank of "A Chief" or "B Chief," each such person appointed shall complete one or more programs of continuing education which, in the aggregate, shall require a duration of instruction of not less than twelve (12) hours.

(CB-82-1994)

It was the intent of this bill to establish not only a minimum requirement but also a developmental process in which junior level line officers completed a progressive course of

study, which included Firefighter II, Fire Officer I and Fire Officer II. The secondary portion of this development was to receive mentoring under senior officers for the required experience time frame (W. McGown, personal communication, June 12, 2005).

This bill does not apply to the career members of the department. Currently the minimum requirement for Career Battalion Chief is serving one year at the rank of captain and successful passing of written test and assessment centers (Promotional Announcement, 2004). There currently is no requirement for career command officers to attend any continuing education. (W. McGown, personal communication, June 12, 2005)

Because they are listed as minimum requirements, a review of the standards for Fire Officer I and II, as they relate to incident command functions was conducted. CB-82-1994 specifically refers to the NFPA 1021 Standard for Fire Officer Professional Qualifications. The NFPA 1021 Standard identifies four levels of fire officer certification and proficiency. The four levels are Fire Officer I, Fire Officer II, Fire Officer III, and Fire Officer IV. Each level contains six areas of escalating degrees of training and knowledge: Human Resource Management, Community and Government Relations, Administration, Inspection and Investigation, Emergency Service Delivery, and Safety (NFPA 1021, 2005).

The sections related to incident command functions Fire Officer I and Fire Officer II are contained in section six, Emergency Service Delivery. Chapter 4-.6.2 requires the Fire Officer I to be able to "develop an initial action plan, given size-up information for an incident and assigned emergency response resources, so that resources are deployed to control the emergency" (NFPA 1021, 2003 p.8). Chapter 5.6 requires the Fire Officer II to "Produce operational plans, given an emergency incident requiring multi-unit operations, so that required

resources and their assignments are obtained and plans are carried out in compliance with approved safety procedures resulting in the mitigation of the incident" (NFPA 1021, 2003 p.9).

4. **Which jurisdictions or fire departments demonstrate proficient incident command and how do they achieve success?**

A questionnaire was developed and sent to a selection of fire departments to gather information on methods that organizations may be utilizing to develop the abilities of incident commanders. The questionnaire also attempted to identify a method to measure the success of developmental processes in regards to improvement of incident command functions. The questionnaire and results are contained in appendix A.

An additional questionnaire was developed and sent to career and volunteer command level officers in the PGCF/EMSD. This questionnaire was an attempt to gather information on methods that personnel within our organization have utilized to develop their abilities as incident commanders. The questionnaire and results are contained in appendix B.

5. **How does the developmental process and requirements for fire service emergency scene incident commanders compare with the developmental process and requirements for managers of other high-risk activities or occupations such as the military?**

The fifth research question proved to be the most difficult literature review. In 1999, Vincent Dunn wrote:

> A chief learns life-and-death decision making in the fire service the same way he learns any other skill-by study and by practical application. First, he begins as an apprentice. He'll watch others and learn. Next, he'll become a journeyman. This means that, after years of study, he'll know how to make decisions, but he'll lack experience.

> Finally, after several more years, if he makes good decisions and causes no disasters, he may become a master of his profession (V. Dunn, 1999, p. 16).

This confirmed an initial gut feeling, following an exhaustive search for resources that much of emergency incident command proficiency comes from experience and on-the-job training. A search of the Learning Resource Center at the National Emergency Training Center in 2005 did result in one comprehensive resource. *Incident Command: Tales from the Hot Seat* examines incident command from a variety of high risk activities through case studies that include military, law enforcement, airline as well as firefighting (Arbuthnot and Flin, 2002).

> One of the most critical factors in crisis management is the skill of the incident commander. This book extends the limited literature on this subject by examining personal experiences of incident command from a range of professions and attempting to reconcile these with an academic analysis of the subject. The editors are a practicing fire commander and an academic researcher who has particular interest in the psychology of incident command. From our two different backgrounds, we had both searched with limited success for case material on incident command, which could be used for training and research purposes. In the available accounts there is some recognition that non-technical or 'soft' skills feature in effective command, but the precise role that these play is often shrouded. This results in the practice of incident command having acquired the status of an art as much as a science, with many practitioners content for this to remain the case (Arbuthnot and Flin, 2002, p. 3).

In 1999, Dunn wrote that the United States Marine Corps approached the FDNY to find out how the fire service makes its most critical decisions.

> Just as soldiers do, firefighters learn how to make life-and-death decisions through experience. We learn the craft by doing it. Experience is the best teacher, even for decision makers (Dunn, 1999, p.11).

In summary, a wealth of information can be found describing the function of, or the operation of, the ICS and the IMS. In contrast, very little information exists in regards to the development of the abilities or skills of emergency scene incident commanders.

PROCEDURES

The purpose of this applied research project was to identify cause(s) of incident command failures and to identify possible solutions to improve the incident command functions of the PGCF/EMSD. Five research questions were developed in an effort to guide the author in finding solutions to the purpose of this applied research project. The descriptive methodology of research was employed to guide the research in answering the research questions.

The research began with a literature review at the Learning Resource Center at the National Emergency Training Center in March of 2005. An additional literature review was conducted utilizing the interlibrary loan process and the author's personal collection of material and departmental publications from the PGCF/EMSD. Fire service trade periodicals, technical reports, published textbooks and departmental informational bulletins were reviewed for information pertaining to the research project.

A comprehensive review of firefighter fatality reports from the NIOSH Fire Fighter Fatality Investigation and Prevention Program was completed. Data was complied into a computerized spreadsheet (Microsoft Excel - NIOSHR~1.XLS) for comparison and evaluation. This review focused on fire fighter fatality reports from January 1, 2000 until February 18, 2004 that matched the following conditions:

1. The firefighter fatality occurred during structural firefighting operations.
2. The firefighter fatality was the result of trauma and/or exposure to fire or products of combustion and not a medical circumstance.

The review resulted in the compilation of thirty-two investigative reports, which resulted in forty-five firefighter deaths and yielded two hundred forty one recommendations. Each recommendation was closely scrutinized to determine its effect on the outcome of the incident and the relationship to incident command functions. The criteria used to establish if a recommendation was linked to incident command functions was based upon the following:

- If the recommendation specifically cited a failure of incident command.
- If the recommendation dealt with an action or inaction of the incident commander.
- If the recommendation dealt with controlling or coordination of on scene resources.
- If the recommendation dealt with the establishment of a procedure or training in a component of incident command.

Four departmental publications which dealt with a firefighter fatality and three potentially fatal injuries where utilized for this research. Numerous past incidents resulting in serious injuries or firefighter fatalities have not been adequately documented to include in this research. These four documents identified two hundred forty four recommendations for improvement. These recommendations were scrutinized using the same criteria as the NIOSH research. The results were complied into a computerized spreadsheet (Microsoft Excel PGFDIN~1.XLS -) for comparison and evaluation.

An external questionnaire was developed to gather information about other department's requirements for, or developmental processes for, command level officers. The information sought included; whether the department had established minimum standards for command level

officers, if the department had a developmental process for command level officers, and if continuing education was required for command level officers. The question was asked if any measurable successes, such as reduction of injuries, could be attributed to such a developmental process.

An internal questionnaire was developed and distributed to command level officers in the PGCF/EMSD. The questionnaire was an attempt to gather information on methods personnel have utilized to develop their abilities as incident commanders and to meet the minimum requirements of CB-82-1994. The questionnaire asked respondents to list the training they have received in incident command and to indicate the source of that training. It also asked the respondents to rate the effectiveness of their training in preparation for their first exposure as an incident commander, and to rate the overall effectiveness of the incident command for the PGCF/EMSD. Results for the questionnaires were recorded utilizing a computerized spreadsheet (Microsoft Excel ARP~1.XLS -) for comparison and evaluation.

LIMITATIONS

The limitations of this research project are many, not the least of which is the subjectivity of the topic matter. The effect of the incident command functions on the outcome of a firefighter fatality incident defies objective measurement. The review of incident reports and documentation such as the NIOSH investigations and departmental informational bulletins becomes subjective in nature. This review also makes assumptions that the information is truthful, comprehensive, unbiased and correctly recorded.

The results of the questionnaires were disappointing at best and proved to be problematic in value. The largest limitation in this segment of the research proved to be the inexperience of the author in developing this instrument.

The external questionnaires were sent to a total of thirty fire departments. Of those only fifteen, exactly fifty percent were received back for review. The selection of the departments was a nonrandom population that was numerically biased in favor of career and or combination fire departments similar in size to the PGCF/EMSD. In addition, questionnaires were mailed to departments that were known to have some type of developmental process, or were believed to be proficient practitioners of the incident command process. To that end, the results should not be considered to be representative of the fire service in general.

The internal questionnaires were sent to command officers within the PGCF/EMSD utilizing an email group that is customarily used for distribution of departmental information. With thirty-four sent to career command officers, and over one hundred sent to the volunteer command officers, only nineteen were received back for review. Of the nineteen received, twelve were received from career command officers (thirty-five percent return) and seven received from volunteer command officers (less than seven percent return). The low percent return, especially from the volunteer command officers, questions the reliability of the results.

DEFINITIONS

Command Level Officer – fire department officers who have command authority and/or responsibility for directing multiple unit responses (3 or more units). For most departments this will mean Battalion Chiefs and above.

Incident Commander. The individual who is in overall command of an incident pursuant to the local jurisdiction's Incident Command System (ICS).

Incident Command System. An organized system of roles, responsibilities, and procedures used to manage emergency incidents.

Fire Officer I. The fire officer, at the supervisory level, who has met the job performance requirements, specified in the standard for Level I (NFPA 1021).

Fire Officer II. The fire officer, at the supervisory/managerial level, who has met the job performance requirements, specified in the standard for Level II (NFPA 1021).

Fire Officer III. The fire officer, at the managerial/administrative level, who has met the job performance requirements, specified in the standard for Level III (NFPA 1021).

Fire Officer IV. The fire officer, at the administrative level, who has met the job performance requirements, specified in the standard for Level IV (NFPA 1021).

RESULTS

1. **Is this problem, as it relates to firefighter death and /or injuries, unique to the PGCF/EMSD?**

The research completed from the NIOSH Fire Fighter Fatality Investigation and Prevention Program, and the four departmental reports from the PGCF/EMSD, clearly indicates that the problem is not unique to the PGCF/EMSD. The research conducted revealed that fifty-one percent of the NIOSH recommendations can be attributed to failures in incident command functions.

A total of thirty-two incidents from the NIOSH on-line database matched the criteria for inclusion in this study. The following table summarizes the information gleaned from the review:

Table 1
Summary of NIOSH Research

Number of Incidents	32
Number of Deaths	45
Number of Injuries	25
Number of recommendations	241
Number of recommendations related to IC functions	124
% Of the recommendations related to IC functions	51%

The research identified stark commonalities in the recommendations and contributing factors cited in the thirty-two incidents reported. The one hundred twenty-four recommendations identified as related to IC functions were recorded into seven general categories. The categorizing of the recommendations was accomplished utilizing twenty-five sub-categories that can be found in appendix C. The following table summarizes the results:

Table 2
NIOSH
Contributing Factors to Fire Fighter Fatalities

Recommendations	# Times Cited
Incident Scene Safety	16
Accountability & PAR Checks	10
Size-up & Risk vs. Gain Analysis	47
Incident Command Post Operations	10
Establishment & Training of SOG/SOP	6
Coordination of Fireground Functions	19
Rapid Intervention	16

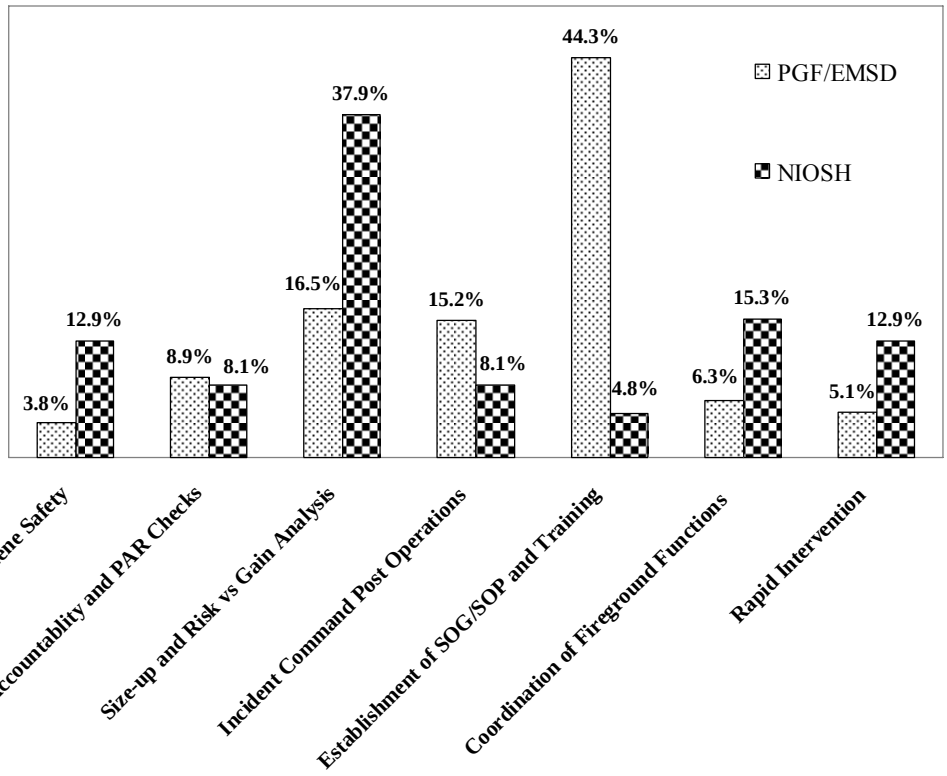
Utilizing the same criteria, the review of the four departmental reports from the PGCF/EMSD incidents are summarized in the following table:

Table 3
Summary of PGCF/EMSD Research

Total Incidents	4
Total Deaths	1
Total Injuries	13
Critical Injuries	3
Total Recommendations Reported	244
Recommendations Related to IC Functions	46
Additional Factors Identified (by Author)	33
Total Recommendations & Factors Related to IC Functions	79
% Related to IC Functions	32%

A grouping of the recommendations was accomplished utilizing the same twenty-five sub-categories that were utilized in the NIOSH research. The following Chart summarizes the results:

Table 4
Research Comparison
NIOSH vs. PGCF/EMSD



2. **What were the ineffective incident command functions, and how did they effect the outcomes of the incidents which led to firefighter injuries or fatalities in Prince George's County?**

The research identified seventy-nine recommendations or factors that could be attributed to failures in the incident command functions. As described previously, many of the factors and recommendations are recurrent or cited several times. The results show that the most frequently cited category, at forty-five percent of the recommendations, is the need for "Establishment and/or Training of SOG/SOP's". This was indicated thirty-five times, utilizing three sub-categories, for the four incidents that were reviewed. The most cited sub-category was, "Training on SOP and the incident command system", which was cited eighteen times. The remaining instances were related to needed revisions/additions or the enforcement of established SOP's.

In the year prior to the incidents at Roseld Court and Sixty-Ninth Street, (2004), the PGCF/EMSD revised the SOP's; General Order 3-1 Fireground Standard Operating Procedure for Structural Fires and General Order 3-2 Incident Management System. These revised SOP's represented a significant change at the task, tactical and command level. The SOP's were distributed to personnel approximately one month prior to taking effect, yet no departmental training was conducted prior to implementation. Table 5 below shows the breakdown for the category of Establishment and/or Training of SOG/SOP:

Table 5
Breakdown PGCF/EMSD Research
Establishment and/or Training of SOG/SOP

Category #	Recommendation	# Times Cited
5	Establishment and/or Training of SOG/SOP	35
5.1	Training on SOGs and the incident command system	18
5.2	Enforce SOP	8
5.3	establish and implement an Incident Command System (ICS) with written standard operating procedures for all fire fighters	9

The departmental report complied as a result of the December 12, 2004 single family dwelling fire at 205 Sixty Ninth Street, where a volunteer captain was critically injured, provides a vivid example of the need for training on SOP and the incident command system.

Recommendation 28

The Fire/EMS Department should ensure that all SOP's are followed and continuous refresher training is provided (McGown, 2005, p. 97)

Recommendation 49

The Fire/EMS Department should conduct mandatory training on the Incident Management System with a portion of this training dedicated to our SOP's and the various interpretations specific to this department. Satisfactory completion of this

> training should be required to perform as a career or volunteer operational command officer (McGown, 2005 p. 46).

These recommendations are based upon the findings that the incident commander failed to complete or satisfactorily perform the functions of command. Specifically:

> The Incident Commander did not confirm that he established command, or the location of the command post. At a point in the radio transmissions he went from calling himself "Chief 8" to "Command". He did not receive or request a size-up from the interior crews via radio. An incomplete situation evaluation was initially given via radio to PSC (Public Safety Communications), other responding units, and Command officers. An inaccurate status update followed and was the basis used to formulate deployment decisions (McGown, 2005, p. 46).

The result of the incident commanders' failure to satisfactorily perform the functions of command was that responding companies were not in place, according to SOP's, to complete established objectives. Companies that would normally provide ventilation, secondary means of escape, ladders and back-up lines were directed to "hold-up". The incomplete situation status and inaccurate status update gave responding units the false impression that the fire consisted of "a room off on the first floor" and the extent of the fire was "just a couch". The fact that the basement was on fire, and had extended to a couch on the first floor was not revealed until over seven minutes into the call, and only four minutes before the first radio message was transmitted indicating a firefighter was in trouble. "The lack of command and control by the incident commander could not be ruled out as a contributing factor" (McGown, 2005 p.46).

The research revealed that the next most frequently cited category, at sixteen percent, was "Size-up & risk-versus-gain analysis". This factor was cited in thirteen recommendations and categorized utilizing seven sub-categories.

Table 6
Breakdown PGCF/EMSD Research
Size-up & risk-versus-gain analysis

Category #	Recommendation	# Times Cited
3	Size-up & risk-versus-gain analysis	13
3.1	ensure that the IC conducts a risk-versus-gain analysis	2
3.2	ensure that the Incident Commander (IC) conducts an initial size-up	2
3.3	ensure that fire fighters are evacuated as soon as it is determined that the trusses are exposed to fire	0
3.4	ensure that Incident Commander (IC) is provided with interior size-up reports	2
3.5	Incident Command (IC) **continually** evaluates the risk versus gain	2
3.6	Incident Commander (IC) formulates and establishes a strategic plan	3
3.7	ensure that adequate fire control forces are on the scene and available	2

The breakdown utilizing the sub-categories resulted in a mostly even outcome. The results did indicate that in three of the four incidents studied, the IC failed to formulate and establish a strategic plan. Using the Roseld Court Incident as an example, it was reported by company level officers that the IC failed to provide direction to the operating units and failed to make a timely decision on the strategy for fire attack (Andrecs, 2005, p.39). The results of this failure lead to opposing hoselines in the basement with fire extension to the first and second floor. The fire extension ultimately cut off the means of escape for two firefighters searching the second floor who were not protected with a hoseline. One of those firefighters received critical respiratory burns, which have resulted in retirement from the department.

A critically important note is that in three of the four incidents studied, the occupants were known to have safely evacuated the building. The Walls Lane Incident that claimed the life of an

eighteen year-old volunteer firefighter Kenneth Hedrick was the only incident where suppression forces where engaged in actual civilian rescues (Poole, 1992 p.18).

The third most cited category closely rivaled the second most with twelve cited recommendations, representing fifteen percent of the total. This category was divided into four sub-categories illustrated in the following table:

Table 7
Breakdown PGCF/EMSD Research
Incident Command Post & Command Operations

Category #	Recommendation	# Times Cited
4	Incident Command Post & Command Operations	12
4.1	IC maintains the role of directing fireground operations for the duration of the incident	2
4.2	Incident Commander clearly identified	2
4.3	ensure that the Incident Commander is clearly identified as the only individual responsible for the overall coordination and direction of all activities at an incident	1
4.4	Sector Supervision	7

The sub-category of Sector Supervision was cited in seven recommendations and was identified in all four incidents. This is a significant finding as it represents 8.9% of the total. A vivid example has been provided from the Roseld Court Incident Report.

> The Division/Group Supervisors failed to ask the Incident Commander what was the overall strategy and tactics, the incident operational plan and what units were assigned and operating. Division/Group Supervisors failed to contact, establish control and direct crews in their areas of responsibility. Units operating report that they did not know that a Division/Group Supervisor was appointed for their geographic area (Andrecs, 2004 p.100)

The failure of the Division/Group Supervisors to establish control and direct crews in their assigned areas resulted in uncoordinated tactics and opposing attack lines in the basement. The

failure of the Division One Supervisor to establish control allowed the fire to extend to the upper floors and ultimately cut off the means of escape to members searching the second floor.

3. What is the current developmental process and requirements for incident commanders in the PGCF/EMSD?

The current minimum requirements for command officers were established in 1994 with the passage of Council Bill CB-82-1994. This bill established the first minimum requirements for volunteer firefighters and emergency medical service care providers in the PGCF/EMSD (Prince George's County Government, 1994). In a nutshell the minimum requirements are:

A) Age not less than twenty-three years.

B) Experience must include four years with the department with not less than two years as a company level officer and not less than one year as a captain.

C) Certified as a Department of Transportation First Responder, or equivalent course of study.

D) Certification as a Fire Officer II in accordance with Standard 1021, or equivalent course of study.

Currently no specified developmental process to obtain these minimum requirements exists. It was the intent of CB-82 to establish a developmental process in which junior level line officers received mentoring under senior command officers during the required experience time frames (W. McGown, personal communication, June 12, 2005).

It is important to note that CB-82 pertains only to the volunteer members of the PGCF/EMSD. A formal document that identifies the minimum requirements for career command officers has proven to be an elusive search. The one document found which deals with minimum

requirements is PGCF/EMSD Emergency Operations Command Directive #43, Acting Battalion Chiefs, which states (McGown, 1998):

> "NFPA Fire Officer II certification will be considered the minimum acceptable standard for Battalion Chief fill-in status. The EOC Lt. Colonel shall confer with the Training Academy Major if needed to verify certifications." (PGCF/EMSD, 1998).

The best answer to what the minimum requirements are and what the developmental process is for career command officers is found by examining the promotional process. When a career member successfully passes the written Lieutenants examination, they are then allowed to complete the practical assessment centers. If these are also successfully completed, the member completes the departments Officer Candidate School (OCS). The OCS is a 4-6 week curriculum, dependent on current budgetary situations, which normally satisfies the requirements of NFPA Professional Standards for Fire Officer I & II, Fire Inspector I and Fire Instructor I & II. The OCS curriculum contains a block of instruction on ICS of approximately 6-8 hours. The practical assessment center has at least one scenario that includes functioning within the ICS. At the completion of OCS the member is placed upon a register of eligibility to be promoted to Lieutenant.

In order to be eligible to participate in the Captains promotional process, a member must have been a promoted Lieutenant for one complete year. After successful completion of a written examination and practical assessment center, the member is placed upon a register of eligibility to be promoted to Captain. No additional training is provided. At least one of the practical assessment centers is an exercise that evaluates the candidates' ability to function within the ICS.

The same requirement holds true for promotion to the rank of Battalion Chief. A member must be promoted to Captain for one complete year before participating in the promotional

process for Battalion Chief. The promotional process for Battalion Chief also consists of a written examination and practical assessment centers. At least one of the practical assessment exercises evaluates the candidates' ability to function as an emergency scene IC. It has recently been proposed to increase the requirements for promotion to Battalion Chief to include completion of forty-five semester hours of college instruction as a prerequisite to taking the written examination. No additional departmental training is provided for the Battalion Chiefs.

The career promotional process, by design, ensures that a career member exceeds the minimum requirements of CB-82 (Sec. 11-337 Deputy and Assistant Volunteer Fire Chiefs) at the completion of OCS and prior to the actual promotion to Lieutenant. Yet the promotional process does not require or provide for any additional training even at the Battalion Chief level.

The internal questionnaire was developed in an attempt to identify what methods where being utilized by personnel to obtain the minimum requirements for both career and volunteer command officers. The result of the research is contained in the table on the following page.

Table 5
Internal Questionnaire Results

Question 1 - Demographics of respondents.			
	Overall	**Career**	**Volunteer**
Average Age	39.8	40.3	37.3
Years Experience as a Command Officer	10.0	6.6	13.4
Question 2 - How was FOII requirement obtained?			
	Overall	**Career**	**Volunteer**
PGCF/EMSD FTA FOII [1]	2	0	2
Maryland Fire & Rescue Institute - FOII	3	0	3
Officer Candidate School - PGCF/EMSD [2]	12	12	0
Challenge Proboard [3]	5	3	2
Question 3 - Training received in IC and source?			
	Overall	**Career**	**Volunteer**
National Incident Management System	14	10	4
Maryland Fire & Rescue Institute	14	8	6
National Fire Academy	14	8	6
Office of Domestic Preparedness	2	2	0
College Degree	3	2	1
Question 4 - Training received in IC from PGCF/EMSD?			
	Overall	**Career**	**Volunteer**
Officer Candidate School - PGCF/EMSD [2]	14	12	0
National Incident Management System	14	11	5
Question 5 - How well prepared where you for IC?			
	Overall	**Career**	**Volunteer**
Scale of 1(low)-5(high)	3.3	3.0	3.1
Question 6 - How do you rate the IC system for PGCF/EMSD?			
	Overall	**Career**	**Volunteer**
Scale of 1(low)-5(high)	3.6	3.7	3.2

[1] PGCF/EMSD Fire Training Academy offered a curriculum of Fire Officer I & II training, for members aspiring to be officers, (primarily for volunteers). This was eliminated in 1997 due to poor attendance and budget reductions.

[2] The PGCF/EMSD conducts an Officer Candidate School as part of the promotional process for Career Lieutenant. This curriculum has been developed to satisfy the 1021 Standard for FOI & FOII and includes a block of instruction on the ICS.

[3] An option to meet the minimum requirements is to complete the certification process through the Maryland Fire Service Professional Qualifications Board.

4. Which jurisdictions or fire departments demonstrate proficient incident command and how do they achieve success?

The method chosen for this research question was a questionnaire distributed to selected fire departments. The selection of which departments demonstrate proficiency is very much a subjective determination. The questionnaire asked the respondents to rate their department's incident command effectiveness for the standard structural fire incident given a range of five choices:

- Consistently effective with few operational deficiencies
- Consistently effective with occasional operational deficiencies
- Mostly effective with some common deficiencies
- Marginally effective with room for improvement
- Ineffective and in need of improvement

Of the departments that responded, forty percent selected, “consistently effective with occasional operational deficiencies”. Twenty-seven percent selected the highest category of “consistently effective with few operational deficiencies” and another twenty-seven percent selected “mostly effective with some common deficiencies”. These results showed that the respondents all felt that their departments had reached some level of proficiency. This may indicate the proficiency of the departments that replied. Or, it may indicate that the respondents felt comfortable because of a past history with positive outcomes. In retrospect, the author was forced to consider if this was indeed a fair question.

Considering each of the departments has achieved a level of proficiency, the research then focused upon “how do you achieve success?” Six of the fifteen departments that responded, or forty percent, reported they had a developmental process in place for newly promoted command officers. All six of these included some type of structured instruction and two also included a period of mentoring from senior personnel. Of the nine departments (sixty percent) that reported no current developmental process in place, four of these indicated they were currently developing a process to put in place.

If one were too consider that six of the departments had structured developmental processes in place and four more were developing a process, the results would reveal that the majority have recognized the importance of command officer development. Five departments,

thirty-three percent, have no process and ten departments, sixty-seven percent, either have a process or are developing one.

On the question of whether the department required or offered any continuing education for command level officers, four of the departments reported they had some type of requirement and four more reported they had a program currently under development. Seventy-three percent of the departments do not require any type of continuing education.

One response in particular is worthy of further discussion. The response received from New York City Fire Department (FDNY), Assistant Chief of Operations Michael Weinlien describes a formal system of development that has been in place for a long time. The minimum requirements for the first level of command officer, Battalion Chief, is that applicants must be promoted to Captain for one day to take the promotional test, and one year to be eligible for promotion.

Each new Battalion Chief takes part in a two hundred and eighty hour program entitled; Battalion Chief Safety, Command and Mentoring Program. Classroom training of two hundred hours deals with strategies and tactics for fire and emergencies along with mid-level management. In the eighty hours of mentoring, the participants shadow seasoned Battalion Chiefs in various sections of the city to experience a variety of different scenarios.

In addition to the required Battalion Chief Safety, Command and Mentoring Program, the FDNY has instituted a Fire Officers Management Institute delivered through Columbia University School of International and Public Affairs. This is an eight-week program for selected applicants and not all chief officers attend. To date over fifty officers of the FDNY have graduated.

5. **How does the developmental process and requirements for fire service emergency scene incident commanders compare with the developmental process and requirements for managers of other high-risk activities or occupations such as the military?**

On the surface, the research indicates the fire service along with many other high-risk activities are similar in they rely heavily on past experiences of the decision makers to guide the incident commanders. This is commonly referred to as recognition primed decision-making (RPD). Klien (1998) developed the PRD making model from studies completed from decision-making by urban fireground commanders. The research, which was sponsored by the US Army, acknowledged that incident commanders rapidly recognized the type of situation, and swiftly decided upon a course of action based upon prior experience. Klien's (1998) research went on to further identify RPD in other domains such as tank platoon captains, naval warfare commanders and intensive care nurses.

A method of development for decision makers gaining some acceptance in the American Fire Service is Crew Resource Management (CRM). This may be better known as Cockpit Resource Management, as it was developed for the aviation industry in the late 1970's (IAFC, 2003).

> The nation's aviation industry recognized that human error was the prevailing cause in aviation disasters. They embarked on a long, arduous and sometimes acrimonious trek to change behaviors and traditions to reduce the likelihood of repeat tragedies. The lessons learned by this industry are worth study by the fire service because of common contributing factors to the deaths in both industries. The captain ruled the flight cockpit with an iron hand before the advent of CRM. On the fire scene, the chief is always in charge and expects (and is expected in some cases) to make all decisions. Both industries ultimately rely on people to accomplish tasks and meet objectives that may involve life-

or-death decisions. A person's very humanity contributes to errors that are the root cause of tragedy. (IAFC, 2003)

To describe CRM in the simplest terms, it is "the effective use of all resources". CRM's goals are to minimize the effect human error has on operations and maximize human performance. Crews trained in CRM learn skills that enhance communication, maintain situational awareness, strengthen decision-making and improve teamwork. The U.S. military, medical industry and shipping industry already have adopted the concept.

> A comparison of the interaction and behaviors of emergency service crews and flight crews reveals a number of additional similarities. Both crews are structured with a leader and one or more crew members. The group functions best when it works as a cohesive team. The team can spend hours of time performing mundane activities and then be called upon to act swiftly under stressful conditions. Some crews work together frequently and others are assembled on short notice. (IAFC, 2003)

A comment from Tom Lubnau and Randy Okray states, CRM is a "force multiplier." They further assert that CRM is not an attempt to undermine the incident commander's (IC) authority. Nor is CRM management by committee. In fact authority should be enhanced through the use of CRM. All team members direct information flow to the IC. While all positions and opinions are considered, the final decision on a course of action still rests with the IC.

DISCUSSION

The results of this applied research indicate a need exists to improve the functions of emergency incident command in order to provide for a safer working environment for firefighters. The review of NIOSH firefighter fatality reports revealed fifty-one percent of the

recommendations could be attributed to failures in incident command functions. The review of four significant incidents in the PGCF/EMSD revealed thirty-two percent of the recommendations could be attributed to failures in incident command functions. The results from the PGCF/EMSD incidents revealed there is a significant lack of understanding of the incident command functions and the departmental SOP's that are a part of the ICS. The findings indicated "Training on SOGs and the incident command system" was the most often cited factor. Another significant finding was the general lack of sector supervision and lack of leadership of ancillary command officers. These results are very similar to the findings of the IAFC as listed below:

> Firefighters are not being killed and injured by flames, smoke and heat. Reading between the lines of the line-of-duty death reports reveals the effects of adrenaline and machismo are significant factors. Communication failures, poor decision making, lack of situational awareness, poor task allocation and leadership failures are listed as the contributing factors in far too many NIOSH Firefighter Line-of-Duty Death Reports. (IAFC, 2003)

The established minimum requirements for command level officers in the PGCF/EMSD are based upon successful completion of a course of study that satisfies the NFPA 1021 Standard for FOII. This is accomplished for career members through the promotional process for lieutenant and successful completion of OCS. The volunteer officers are mandated to this requirement through the Prince George's County Code Subtitle 11, and most often accomplished through training with the Maryland Fire Service Institute. In conjunction with the passage of CB-82-1994, the PGCF/EMSD Fire and Emergency Medical Services Training Academy (FETA) implemented and delivered FOI and FOII curriculums to the volunteer members of the department. At that time, this was the preferred method of certification for volunteer fire officers.

The curriculum was based upon the established SOP's of the PGCF/EMSD, and satisfied the requirements of NFPA FOI and FOII. Unfortunately, budget shortfalls and a dwindling attendance lead to the elimination of this curriculum in the late 1990's. Since the elimination of the PGCF/EMSD FETA curriculums, MFRI is now the primary source of officer certifications for the volunteer officers. The MFRI curriculum satisfies the requirements of NFPA FOI and FOII, along with CB-82-1994, but it is developed around a general knowledge base and not specific to the PGCF/EMSD operations. It can easily be argued that this has lead to the "significant lack of understanding of the incident command functions and the departmental SOP's that are a part of the ICS" (Andrecs, 2004).

Satisfying the minimum requirements to be a command level officer is not particularly difficult or complex. The MFRI FOI and FOII curriculums are designed for students to be successful. This is not to say the instruction is invalid, only to point out that successful completion may not challenge a student to seek a higher level of knowledge.

Currently there is no formal developmental process for command level officers in the PGCF/EMSD. It was the intent of CB-82 to establish a developmental process in which junior level line officers received mentoring under senior command officers during the required experience time frames (McGown, personal communication, June 12, 2005). The development of skill and knowledge in incident command and critical decision-making is really left up to the individual involved. This is not to say the current contingent of command officers is incompetent. Many of the officers are highly motivated, skilled and proficient in their positions. Many of the highly skilled or senior officers serve as mentors and have positively influenced junior officers. However, the situation today is the level of proficiency is a product of the

motivation and diligence of the aspiring individual and the levels of experience, training, and skills of command officers can be highly inconsistent.

The value of the established minimum requirements is subjective and worthy of debate. The FOII standard is applicable to emergency service delivery at the command staff and unit supervision positions within the Incident Management System based upon the following section:

> 5.6.1 (B) Emergency Service Delivery Requisite Skills. The ability to implement an incident management system, to communicate orally, to supervise and account for assigned personnel under emergency conditions; and to serve in command staff and unit supervision positions with in the Incident Management System. (NFPA, 2003)

The demands on an individual placed in the position of incident commander can quickly overwhelm the most skilled in the profession. The responsibilities in regard to the safety of responders, as well as citizens we serve, places the incident commander in a position that is unique to most supervisory positions. The dynamic nature of emergency scene mitigation and subordinates working in environments that are immediately dangerous to life and health are aspects faced by incident commanders. Expecting someone meeting the requirements for unit-supervision or command staff to operate at a higher position, with out prior evaluation, is injudicious.

The question of which fire departments demonstrate proficiency in incident command proved to be difficult to answer objectively. One would have to consider how this proficiency could be measured. Many departments can claim to be proficient, and base this assessment upon injury and/or firefighter fatality statistics. However, the question still remains as to if this is an indication of a proficient incident command system or capable incident commanders. A fair question for every fire department to ask would be: "are we good or lucky?"

The research method to address this question was a questionnaire sent to selected departments. The selection of departments was a subjective determination based upon size and some predetermined information by the author. In retrospect, the author is forced to consider if the selection process was valid and if the data gleaned was of value. The results were all of the respondents felt their departments had reached some level of proficiency. At the conclusion of the data collection, the author did consider as to what result could be obtained from selecting departments who had suffered a line-of-duty death reported to NIOSH. This selection would have narrowed the data range to departments, which had been forced to closely exam their proficiency in a number of areas. All though this research may have yield a more valid result, careful consideration as to the approach is needed to glean the information in a non-offensive manner. This approach would also have to consider if liability issues could allow truthful and candid response.

Of the responses received, the results revealed the majority of departments recognized the importance of command officer development. Forty percent reported they had a developmental process in place for newly promoted command officers. Of these, all six included some type of structured instruction and two also included a period of mentoring from senior personnel command officers. As to the question of how success is achieved, the value of the research method is again questionable. The lack of the authors experience in this type of research again proved to be a limiting factor. A much deeper explanation as to the development process and the curriculum content of structured programs would have provided more valuable data.

The most important revelation the author has gleaned from this research is not from other departments but from the PGCF/EMSD. Many departments can claim proficiency in many areas, and can justify that position with data. The PGCF/EMSD cannot proclaim proficiency, especially

in the area of incident command functions. The four incidents utilized for this research clearly identifies a change is needed to improve the efficiency and performance of the incident command system with-in the PGCF/EMSD.

The research indicates the fire service is similar to the military in that both rely heavily on the past experiences of decision makers as a developmental process. This is commonly referred to as Recognition Primed Decision Making. (RPD)

> The RPD model asserts that decision makers draw upon their experience to identify a situation as representative of or analogous to a particular class of problem. This recognition then leads to an appropriate course of action (COA), either directly when prior cases are sufficiently similar, or by adapting previous approaches. (Killion, 2000)

A distinction that bears discussion is the fire service never set out to adopt RPD as a model as the military has. The distinction is that RPD was developed from research completed in 1988 by Gary Klein for the military when he studied how the fire service made critical decision on the fire ground. The fire service's method of decision making has been around for an indefinite amount of time. Klein's study merely identified, by name, the process that was already in use.

> Klein bases much of his work on a theory of decision-making he developed through his early studies of fire ground-commanders--people in charge of putting out urban and suburban fires. The theory states that people make decisions based on experience. (Azar, 1999)

In contrast, the fire service only recently has considered the process of CRM where as others such as the airline industry has been utilizing it for nearly twenty-five years.

> Additional industries looked into and adopted CRM throughout the 1980s and 1990s. The medical field, military and maritime trades introduced CRM into their fields with dramatic results. (IAFC, 2003, P.4)

RECOMMENDATIONS

The need for competent emergency incident scene commanders in the PGCF/EMSD is a statement that needs no research to justify. A functioning and capable incident scene commander is an essential part of firefighter safety. The PGCF/EMSD has historically been a progressive system and innovative in it's approach to service delivery. The requirements established with CB-82-1994 was a move that, at the time, was a bold move in an attempt to "raise the bar" for volunteer command officers. The process of sending potential officers through a structured OCS was first done in PGCF/EMSD in the late 1970's. At the time this was very innovative and few departments in the nation had such a program. Because the PGCF/EMSD has faced the tragedy of firefighter death and serious life threatening injuries, it is time again to think progressively and take bold steps to find solutions.

The author's recommendation is to add a component to the minimum requirements to operate as a command level officer with in the PGCF/EMSD. The additional component would be applicable equally to the career and volunteer members of the PGCF/EMSD. This component would not negate or effect the current requirement of successful completion of FOII as required by CB-82-1994, in the case of volunteer members, or which is required by successful completion of OCS, which is required of career members. There still exists a need to provide for certification of officers to the national standards. The current requirements do provide for this and have value in providing a baseline of knowledge to operate as an officer in the fire service.

The recommended component would consist of a structured curriculum developed upon the knowledge, skills and abilities required to effective apply the SOP's of the PGCF/EMSD to emergency incidents. For lack of a better term, we can refer to this as a "Command Officers Boot Camp". The primary goal would be to provide a consistent base of instruction to anyone who would bear the responsibility of serving in the role of incident commander for multiple unit operations regardless of affiliation to the career or volunteer force.

Ideally this curriculum should be developed utilizing a combination of subject matter experts to include members of PGCF/EMSD and nationally recognized specialist. The course would include, for example, modules dealing with leadership, decision-making, sector supervision and risk-benefit, along with command operations at the task, tactical and strategic levels. The instruction should be reinforced through extensive practical evaluation utilizing scenario simulations.

The recommended method of delivery would be for the course to be offered through the PGCF/EMSD Training Academy several times per year. Integrating the career and volunteer command officers in classroom participation of this curriculum could help to improve operational effectiveness on the emergency scene.

Volunteer members would be eligible to take the course after promotion to Captain. Authority to operate as a volunteer command officer would be contingent upon the successful completion of the curriculum. Career members should be given one year to complete the curriculum from the time they are promoted to Captain. Successful completion, in the required time frame, should be made a part of the position description.

Continuing education requirements should be expanded to include career command officers. The continuing education requirement should mandate an annual review of

PGCF/EMSD SOP's and training on any additions or revisions. Successful completion of an incident scene simulator and evaluation should be required for every command officer annually to retain authority to operate as an incident commander. Requiring participation in incident critiques should be considered.

The research indicated a system of mentoring as being a critical component of the development of command level officers. Developing a structured mentoring program would be relatively easy for career command officers. Officers who had completed the curriculum would then be required to spend time shadowing a seasoned Battalion Chief. A task book for command officers, much like a recruit book, which included objectives that had to be accomplished, should be developed. This would ensure continuity and credibility in the process. As for the volunteer officers, thought should be given to requiring them to do the same process. With the twenty-four hour coverage of Battalion Chiefs in the third, fourth and fifth battalions, volunteer officers could shadow the career chiefs and complete the tasks. Another option would be to establish a list of mentors from the volunteer ranks to provide this service.

Further research is needed in the area of development of decision-making abilities for emergency incident commanders. The results of the research show a general weakness in risk-benefit evaluation, size-up and risk management. Realistic scenarios delivered in a real-time format would assist in teaching the principles involved and to provide experience to participants.

REFERENCES

Arbuthnot, K. & Flin, R. (2002). *Incident Command: Tales from the Hot Seat.* Burlington, VT: Ashgate

Bosanko, E. (1990). *Triumph and Tradition: Firefighting in Prince George's County, Maryland, 1887-1990.* Lucas Printing Company

Brunacini, A. (1985). *Fire command.* Chapter 1, NFPA, Qunicy, MA

Dunn, V. (1999). *Command and Control of Fires and Emergencies.* Saddle Brook, NJ: Fire Engineering Books & Video.

International Association of Fire Chiefs. (2003). *Crew resource management: A positive change for the fire service.* IAFC, 4025 Fair Ridge Drive, Suite 300, Fairfax, Virginia 22033.

Killion, T., (2000, November-December). Decision making and the levels of war*: Military Review.* P.66. U.S. Army, Fort Leavenworth, KS

Lubnau, T., & Okray, R., (2001, August, Vol. 154, No. 8). Crew Resource Management for the Fire Service. *Fire Engineering.* p.99. Pennwell Publishing, Saddle Brook, NJ

Minimum Qualifications for Volunteer Firefighters and Emergency Medical Service Care Providers. Subtitle 11. Div. 7. Fire Safety. Prince George's County Code (MD). Sec. 11-339 – Sec. 11-343 (1991 Ed. & Supp. 1992)

National Institute of Standards and Technology. (2005). *The economic consequences of firefighter injuries sand their prevention. Final report.* (NIST GCR 05-874). Gaithersburg, MD: U.S. Government Printing Office.

Prince George's County Fire/EMS Department. (2004). *Final report: Inc# 04-053-0192: 5014 Roseld Court.* (Available from the Prince George's County Fire/EMS Department, 9201 Basil Court, Suite 452, Largo, Maryland 20774).

Prince George's County Fire/EMS Department. (1998*). Special investigative report for the Fire Chief: 2205 Calvert Street.* (Available from the Prince George's County Fire/EMS Department, 9201 Basil Court, Suite 452, Largo, Maryland 20774).

Prince George's County Fire/EMS Department. (2005). *205 69th Street: Personal injury and operational report.* (Available from the Prince George's County Fire/EMS Department, 9201 Basil Court, Suite 452, Largo, Maryland 20774).

Prince George's County Fire/EMS Department. (1992). Fire Ground Update. *3807 Walls Lane.* (Available from the Prince George's County Fire/EMS Department, 9201 Basil Court, Suite 452, Largo, Maryland 20774).

United States Coast Guard. (1998). *Crew Resource Management Curriculum Guide*. United States Coast Guard. Washington, DC.

APPENDIX A

Incident Command Questionnaire

This research will not identify departments by name. In order to prevent duplicate responses, I ask for your cooperation in providing the following information:

Department: _____

Contact Person: _____

Telephone or e-mail: _____

1) Please provide the following information about your department:

A Department Type:

☐ Career

☐ Volunteer

☐ Combination

B Response area served is best described as:

☐ Rural

☐ Suburban

☐ Urban

C Annual Call Volume:

☐ Under 5,000

☐ 5,000 – 10,000

☐ 10,000-50,000

☐ 50,000-100,000

☐ Over 100,000

APPENDIX A (PAGE 2)

NOTE: For the following survey questions, the term "Command Level Officer" refers to officers who have command authority and/or responsibility for directing multiple unit responses (3 or more units). For most departments this will mean Battalion Chiefs and above.

2) Does your department currently have established minimum requirements to be a Command Level Officer? If so what are they?

3) Does your department currently have a developmental process to prepare newly promoted Command Level Officers for the position? If so what does it consists of?

4) Does your department have any "continuing education" requirements for Command Level Officers?

APPENDIX A (PAGE 2)

5) If the answer to #3 is yes, has your department identified any measurable successes, such as a reduction of injuries, since the implementation of the process? If so please explain.

6) Given the following choices, how would you rate your departments Incident Command effectiveness for the standard structural fire incident?

☐Consistently effective with few operational deficiencies

☐Consistently effective with occasional operational deficiencies

☐Mostly effective with some common deficiencies

☐Marginally effective with room for improvement

☐Ineffective and in need of improvement

Comments:

Appendix A-1

External Questionnaire Results			
Question 1- Demographics of Department			
		Career	12
		Volunteer	0
		Combination	3
Area Served			
		Rural	4
		Suburban	4
		Urban	11
Call Volume (Annual)			
		Average	3.6
	Under 5,000	1	0
	5,000 - 10,000	2	0
	10,000 - 50,000	3	8
	50,000 - 100,000	4	5
	Over 100,000	5	2
Question 2 - Does your department currently have established minimum requirements to be a Command Level Officer? If so what are they?			
Yes or **N**o			
		Yes	15
		No	0
		Rank	Capt. 10 Co. Ofc. 1 PM Lt. 1
		Time @ grade	1 day thru 5 years (avg 2 years)
		Total Exp.	3 responses 10 yrs (2); 7yrs (1)
		Written Exam	4
		Assessment	3
		Cert. FOII	5
		State ICS	1
		College	A.A. 1
Question 3 - Does your department currently have a developmental process to prepare newly promoted Command Level Officers for the position? If so what does it consists of?			
		Yes	6
		No	9
Currently in Development			4
Class			6
Mentoring			2
NFA Multi Alarm Class			1
Question 4 - Does your department have any "continuing education" requirements for Command Level Officers?			
		Yes	4
		No	11
		Currently in Development	4
Question 5 - If the answer to #3 is yes, has your department identified any measurable successes, such as a reduction of injuries, since the implementation of the process? If so please explain.			
			NONE
Question 6 - Given the following choices, how would you rate your departments Incident Command effectiveness for the standard structural fire incident?			
		Average	2
		Consistently effective with few operational deficiencies **(1)**	4
		Consistently effective with occasional operational deficiencies **(2)**	6
		Mostly effective with some common deficiencies **(3)**	4
		Marginally effective with room for improvement **(4)**	0
		Ineffective and in need of improvement **(5)**	0

APPENDIX B

Incident Command Development Survey

1. Please provide the following information about yourself: (Check appropriate selection)

Are you a: _____Career Chief Officer _____Volunteer Chief Officer

If you are a volunteer in PGFD, indicate if you are a career firefighter in another jurisdiction:

_____No _____Yes: Rank as Career_____

Age in years_____

Years as a Command Officer _____

2. How did you complete the minimum requirements, specifically Fire Officer II, to be a Chief Officer in accordance with CB82? EXAMPLE: (MFRI FOII; PGFD FTA; Challenged Pro-Board Certification,
etc.)_____

What year did you complete the minimum requirement? _____

3. Briefly describe the training you have received in the area of incident command and indicate the source of the training (MFRI, PGFD or other jurisdiction):

APPENDIX B (PAGE 2)

Incident Command Development Survey
Page 2

4. What training in the area of incident command have you received from the Prince George's County Fire/EMS Department?

5. Using a scale of 1 to 5, how well prepared where you for the first instance when you where the incident commander of a structural fire incident?

___1. Unprepared
___2. Less then Satisfactory
___3. Satisfactory
___4. Acceptable
___5. Well prepared

Additional comments:

6. Using a scale of 1 to 5, how would you rate the Prince George's County Fire/EMS Departments incident command effectiveness for the standard structural fire incident?

___1. Consistently effective with few operational deficiencies
___2. Consistently effective with occasional operational deficiencies
___3. Mostly effective with some common deficiencies
___4. Marginally effective with room for improvement
___5. Ineffective and in dire need of improvement

Additional Comments:

APPENDIX B-1

PGCF/EMSD Incident Command Development Survey Results

PGCF/EMSD Questionnaire Results			
Question 1 - Demographics of respondents.	Averages		
	Overall	Career	Volunteer
Average Age	39.8	40.3	37.3
Years Experience as a Command Officer (average)	10.0	6.6	13.4
Question 2 - How was FOII requirement obtained?			
	Overall	Career	Volunteer
PGF/EMSD FTA FOII (1)	2	0	2
Maryland Fire & Rescue Institute - FOII	3	0	3
Officer Candidate School - PGF/EMSD (2)	12	12	0
Challenge Proboard (3)	5	3	2
Question 3 - Training received in IC and source?			
	Overall	Career	Volunteer
National Incident Management System	14	10	4
Maryland Fire & Rescue Institute	14	8	6
National Fire Academy	14	8	6
Office of Domestic Preparedness	2	2	0
College Degree	3	2	1
Question 4 - Training received in IC from PGF/EMSD?			
	Overall	Career	Volunteer
Officer Candidate School - PGF/EMSD (2)	14	12	0
National Incident Management System	14	11	5
Question 5 - How well prepared where you for IC?			
	Overall	Career	Volunteer
Scale of 1(low)-5(high) (average)	3.3	3.0	3.1
Question 6 - How do you rate the IC system for PGF/EMSD?			
	Overall	Career	Volunteer
Scale of 1(low)-5(high) (average)	3.6	3.7	3.2

(1) PGF/EMSD Fire Training Academy offered a curriculum of Fire Officer I & II training, for members aspiring to be officers, (primarily for volunteers). This was eliminated in 1997 due to poor attendance and budget reductions.

(2) The PGF/EMSD conducts an Officer Candidate School as part of the promotional process for Career Lieutenant. This curriculum has been developed to satisfy the 1021 Standard for FOI & FOII and includes a block of instruction on the ICS.

(3) An option to meet the minimum requirements is to complete the certification process through the Maryland Fire Service Professional Qualifications Board.

APPENDIX C

NIOSH RESEARCH

Case #	Date	Overview
FACE-F2004-10	Feb. 18, 2004	Career fire fighter dies searching for fire in a restaurant/lounge - Missouri
FACE-F2004-05	Jan. 9, 2004	Residential basement fire claims the life of career lieutenant - Pennsylvania
FACE-F2004-04	Dec. 16, 2003	Career fire fighter dies of carbon monoxide poisoning after becoming lost while searching for the seat of a fire in warehouse - New York
FACE-F2004-02	Nov. 29, 2003	Basement fire claims the life of volunteer fire fighter - Massachusetts
FACE-F2003-32	Oct. 1, 2003	Two fire fighters die and eight fire fighters are injured from a silo explosion at a lumber company - Ohio
FACE-F2003-18	June 15, 2003	Partial roof collapse in commercial structure fire claims the lives of two career fire fighters - Tennessee
FACE-F2003-12	March 31, 2003	Career fire fighter dies and two career fire fighters injured in a flashover during a house fire - Ohio
FACE-F2002-50	Nov. 25, 2002	Structural collapse at an auto parts store fire claims the lives of one career lieutenant and two volunteer fire fighters - Oregon
FACE-F2002-49	Nov. 1, 2002	Volunteer lieutenant dies following structure collapse at residential house fire - Pennsylvania
FACE-F2002-44	Sept. 30, 2002	Parapet wall collapse at auto body shop claims life of career captain and injures career lieutenant and emergency medical technician - Indiana
FACE-F2002-40	Sept. 14, 2002	Career fire fighter dies after roof collapse following roof ventilation - Iowa
FACE-F2002-32	July 4, 2002	Structural collapse at residential fire claims lives of two volunteer fire chiefs and one career fire fighter - New Jersey
FACE-F2002-20	May 3, 2002	Two career fire fighters die in four-alarm fire at two-story brick structure - Missouri
FACE-F2002-06	March 7, 2002	First-floor collapse during residential basement fire claims the life of two fire fighters (career and volunteer) and injures a career fire fighter captain - New York
FACE-F2002-11	March 4, 2002	One career fire fighter dies and a captain is hospitalized after floor collapses in residential fire - North Carolina
FACE-F2002-12	March 1, 2002	Volunteer fire fighter killed and career chief injured during residential house fire - Tennessee
FACE-F2002-07	Feb. 11, 2002	One career fire fighter dies and another is injured after partial structural collapse - Texas
FACE-F2001-33	Oct. 13, 2001	High-rise apartment fire claims the life of one career fire fighter (captain) and injures another career fire fighter (captain) - Texas

APPENDIX C (CONTINUED)

NIOSH RESEARCH

Case #	Date	Overview
FACE-F2001-23	June 17, 2001	Hardware store explosion claims the lives of three career fire fighters - New York
FACE-F2001-27	June 16, 2001	Career fire fighter dies after single-family-residence house fire - South Carolina
FACE-F2001-18	May 9, 2001	Career fire fighter dies after becoming trapped by fire in apartment building - New Jersey
FACE-F2001-15	March 18, 2001	Residential fire claims the lives of two volunteer fire fighters and seriously injures an assistant chief - Missouri
FACE-F2001-13	March 14, 2001	Supermarket fire claims the life of one career fire fighter and critically injures another career fire fighter - Arizona
FACE-F2001-16	March 8, 2001	Career fire fighter dies after falling through the floor fighting a structure fire at a local residence - Ohio
FACE-F2001-09	Feb. 25, 2001	Volunteer fire fighter dies and another fire fighter is injured during wall collapse at fire at local business - Wisconsin
FACE-F2001-08	Feb. 17, 2001	Two volunteer fire fighters die fighting a basement fire - Illinois
FACE-F2001-04	Jan. 11, 2001	Volunteer fire fighter (lieutenant) killed and one fire fighter injured during mobile home fire - Pennsylvania
FACE-F2000-26	April 20, 2000	Residential structure fire claims the life of one career fire fighter - Alabama
FACE-F2000-23	March 31, 2000	Career fire fighter dies and three are injured in a residential garage fire - Utah
FACE-F2000-16	March 3, 2000	Arson fire claims the life of one volunteer fire fighter and one civilian and severely injures another volunteer fire fighter - Michigan
FACE-F2000-13	Feb. 14, 2000	Restaurant fire claims the life of two career fire fighters - Texas
FACE-F2000-09	Jan. 27, 2000	Volunteer fire fighter dies fighting a structure fire at a local residence - Texas

APPENDIX C-1

NIOSH RESEARCH

CATEGORIES AND SUB-CATEGORIES

Category #	Recommendation Categories & Sub-Categories	# Times Cited
1	**Incident Scene Safety**	16
1.1	Establish integrated incident safety officer, Separate from IC	12
1.2	Establishment of & Monitoring of Safety (collapse) Zones	4
2	**Accountablity and PAR checks**	10
2.1	ensure personnel accountability reports are conducted and reported to the IC	1
2.2	ensure that accountability is maintained on the fire ground	9
3	**Size-up and risk-versus-gain analysis**	47
3.1	ensure that the IC conducts a risk-versus-gain analysis	6
3.2	ensure that the Incident Commander (IC) conducts an initial size-up	7
3.3	ensure that fire fighters are evacuated as soon as it is determined that the trusses are exposed to fire	4
3.4	ensure that Incident Commander (IC) is provided with interior size-up reports	5
3.5	Incident Command (IC) **continually** evaluates the risk versus gain	13
3.6	Incident Commander (IC) formulates and establishes a strategic plan	1
3.7	ensure that adequate fire control forces are on the scene and available	11
4	**Incident Command Post Operations**	10
4.1	IC maintains the role of directing fireground operations for the duration of the incident	6
4.2	Incident Commander clearly identified	1
4.3	ensure that the Incident Commander is clearly identified as the only individual responsible for the overall coordination and direction of all activities at an incident	3
4.4	Sector Supervision	
5	**Establishment of SOG/SOP and Training**	6
5.1	Training on SOGs and the incident command system	2
5.2	Enforce SOP	3
5.3	establish and implement an Incident Command System (ICS) with written standard operating procedures for all fire fighters	1
6	**Coordination of fireground functions**	19
6.1	ensure that ventilation is closely coordinated with the fire attack	12
6.2	ensure that fire fighters on the floor above the fire have a charged hoseline	4
6.3	ensure that backup lines are equal to or larger than the initial attack lines	1
6.4	ensure fire fighting operations do not increase hazards on the interior–e.g., opposing hose streams	1
6.5	ensure that exterior fire attack is at a minimum during search and rescue	1
7	**Rapid Intervention Team**	16
7.1	ensure that a Rapid Intervention Team is in place	15
7.2	ensure that multiple Rapid Intervention Crews (RIC) are in place in a large structure with multiple points of entry	1

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Jerome F. LaMoria